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Title: The role of knowledge integration and effective decision-making in delivering change projects

Abstract: Team members apply knowledge to implement projects and deliver change. Many studies report inherent challenges and complexities related to knowledge integration and effective decision-making during project implementation. This paper conceptualises the relationship between individual competence, team performance, knowledge integration and decision-making while implementing projects that deliver change. Extant literature is reviewed to analyse the role of knowledge integration capability in enhancing individual competence and team performance, and improving decision-making. The paper provides novel insights that have longer-term implications to support the mobilisation, integration, sharing, and application of knowledge for effective decision-making to underpin the change process.

Key words: Knowledge integration, decision-making, performance, competence, collaboration, change

Track: Organizational Transformation, Change and Development

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1. Introduction

Projects by their very nature create change, (Cabrey et al 2014). In order to implement projects and deliver change, team members must be willing and able to share knowledge, (Dietrich et al 2010). Projects deliver change in uncertain environments wherein unstructured problems require dynamic resolution approaches supported by team performance. Integration of knowledge possessed by team members is an essential part of the change effort, and knowledge integration capability is an important element of effective decision-making during project implementation, (Garcia-Penalvo and Conde, 2014). Knowledge needs to be available in dynamic form to ensure that relevant shared contexts and interpretations create common knowledge and understanding in changing situations. The integration of dynamic knowledge within a project team's core work practices and behaviours helps support decision-making. Thus, available and accessible knowledge enhances mobilisation, integration, sharing, and application of knowledge for effective decision-making in a dynamic manner.

This paper examines how knowledge available during project implementation while delivering change can be mobilised and applied to make effective decisions. Extant literature is reviewed to analyse the role of knowledge integration capability whilst applying available and accessible dynamic knowledge for decision-making. In doing so, the paper presents an understanding of how individual competence and team performance capabilities make dynamic knowledge available, which is integrated to support decision-making capability during the delivery of change.

2. Theoretical Background

Making decisions on the basis of individual competence within team activities is complex, (Garcia-Penalvo and Conde, 2014). The complexity arises from the need to not only gather prior experience and learning, but also to integrate perspectives, interests and expectations of different stakeholders, individuals, and decision-makers. The use of knowledge along with its integration and sharing has long been viewed as a collective process of constructing, articulating and redefining shared beliefs and mental models through social interaction that help manage complex tasks and activities during collaboration, (Grant 1996, Huang 2000, and Chang et al 2012). However, Huang et al (2001) argue that current conceptualisation of how knowledge is integrated and made available within the context of coordinating specialised expertise and tasks remains limited. It is therefore important to understand the dynamics of knowledge integration and sharing whilst performing collaborative activities such as decision-making during team performance.

The recognition of knowledge support for decision-making is especially relevant as individuals rely on their competence and expertise to perform and deliver collaborative team outcomes whilst implementing projects and delivering change. The main focus of providing knowledge support is to enhance development processes and team performance, and enable the delivery of collective output based on individual efforts. This requires interaction and dialogue between individual competence capability and decision-making capability, and knowledge provides the context that helps integrate different perspectives, expertise and mental models. Knowledge integration allows the combining of individual competence into achievement of team

performance, and provides common understanding for decision-making. Therefore it is important to evaluate the role of individual competence, team performance, knowledge integration, and decision-making capabilities during the implementation of change projects.

The challenge is to ensure that knowledge is integrated and provides common understanding required to improve team performance and decisions, and deliver desired collective outcomes. In other words, an understanding is required of how knowledge that is available during project implementation while delivering change, can be mobilised and applied to make effective decisions. In order to examine this challenge, this paper seeks to answer the question:

What is the role of knowledge integration in supporting decision-making while implementing projects that deliver change?

The paper addresses the research question through a literature study approach. Knowledge integration capability is hypothesised as a moderating factor connecting individual competence capability and team performance capability with decision-making capability, as depicted in Figure 1.

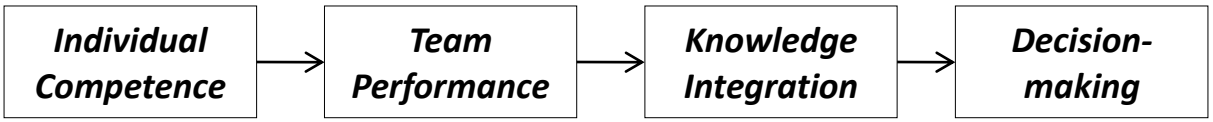

Figure 1: Knowledge integration as moderating factor

Focusing on the initial research hypothesis, a literature search is conducted on existing empirical and conceptual studies to identify the relationship between individual competence and team performance with knowledge integration and support for decision-making. The emphasis of the literature search is on studies dealing explicitly with the examined relationships in question, that is, individual competence and knowledge integration, team performance and knowledge integration, and knowledge integration support for decision-making. Since the aim of the research is not to execute complete literature reviews on the selected topic but merely to examine the relationships between different concepts, the number of refereed studies in this article are limited and provide only those that are essential in order to examine the research question.

2.1 Knowledge Integration

Knowledge integration refers to the ability of team members to turn knowledge into action based on their individual competence and expertise. Knowledge creation, integration and sharing are central activities for team work, and significant research has been done to understand their role in delivering collective outcomes. Nonaka and Takeuchi (1995) proposed a theory to explain the phenomenon of knowledge creation and integration through the phases of socialisation, externalisation, combination and internalisation. The subsequent works of Von Krogh, Ishijo and Nonaka (2000) and Nonaka, Toyama, and Byosiere (2001) built upon Nonaka and Takeuchi's (ibid) theory, and Alavi and Leidner (2001) further developed a knowledge management framework that defined processes for the creation, storage, retrieval,

transfer, integration and application of knowledge. This paper attempts to operationalise the main concepts of Nonaka and Takeuchi's (ibid) and Alavi and Leidner's (ibid) work and apply them to understand the role of knowledge integration in allowing leaders to make effective decisions during project implementation.

2.2 Individual Competence and Knowledge Integration

Team members work together to implement projects and deliver change as they apply their competence and expertise while undertaking design and development work, and making decisions, (Garcia-Penalvo and Conde, 2014). Collaborative linkages are the primary means of transferring specialised knowledge when team members collaborate (Tasi, 2001), and doing so facilitates knowledge reuse and the recombination of existing knowledge (Marjchrzak, Cooper, & Neece, 2004; Terwiesch & Loch, 1999). Grant (1996) argues that integration of knowledge, either explicitly or implicitly, of individuals from different competence areas is difficult, and advocates integrating specialist individual knowledge to achieve effective knowledge collaboration and application. Knowledge integration capabilities are required to collaborate and integrate specialist knowledge from different competence areas, and Gold, Malhotra, and Segars (2001) identify creation and application as process capabilities required to achieve knowledge integration.

2.3 Knowledge Integration and Team Performance

Common knowledge created while working together forms the basis for evaluating the performance of collective team outputs. Objective measures underpin collaborative activities and strongly influence the creation of common knowledge and its integration, Newell et al (2004). Measures allow leaders to assess performance and the tangible benefits gained through people working together. Researchers have long recognised the need for people to collaborate in order to perform (Davenport 1993 and Van De Van 1986), and Dougherty and Hardy (1996) confirm that collaborative structures and knowledge integration of cross-functional teams are important for decision-making and delivering team performance. Distinct expertise need to be shared between team members with a sufficient level of understanding to enable individuals to work together towards their common goals from different perspectives (Xue et al 2011). Combining previously unconnected aspects or recombining previously associated aspects integrates knowledge (Leonard-Barton, 1992), as individuals and team members realise that solutions and tasks are better achieved through dynamic interaction and feedback. In this way individuals and teams are likely to create new knowledge and engage in effective sharing and integration of knowledge to achieve their predefined goals.

2.4 Knowledge Integration support for Decision-making

Collective team member knowledge forms the basis of decision-making and commitment to change projects. Prior experience enables effective and improved decision-making (Ghattas et al, 2014), and knowledge support helps challenge assumptions and ensures appropriate choices are made during project implementation. Decision activities include an analysis of the impact the project will have on the business and technical environment along with the possible risks involved in implementing the project. The analysis views the goals, scope and functionality of project development and implementation, and how they fit or respond to the existing processes with which they are required to interact. Projects require crucial decisions to be made and the consequent knowledge created can be further effectively applied in a dynamic manner when

individuals perform tasks that rely on their expertise and competencies. Therefore, amassing, synthesising, and integrating specialised knowledge from multiple sources has become an fundamental factor during decision-making processes.

The importation of new knowledge coupled with the recombination of existing knowledge provides information and knowledge that can be leveraged to improve decision-making, and improve performance. Decision-making in project management processes is often compromised when team members fall victim to the fallacy where benefits are overestimated and costs are underestimated. Mutual consideration of work process strengths and weaknesses allows individuals to identify requirements and capabilities for targeted work processes, predict what resources are needed to fulfil the requirements, and determine how best to deploy resources to optimise performance and minimise delays (Mitchell & Zmud, 1999). The act of coordination is a knowledge integration activity that facilitates a common understanding of task objectives and the means to reach those objectives, (Reich & Benbasat, 1996). This knowledge integration is realised by synthesising varying expectations and expertise during decision-making processes, and enables different views to be incorporated.

2.5 Relationship between Individual Competence, Team Performance, Knowledge Integration, and Decision-making

The relationship between individual competence, team performance, knowledge integration and decision-making capabilities can be viewed in a dynamic manner based on their interactions while implementing change efforts. An effective collaborative mechanism for understanding the interactions between these capabilities is to identify the flow of knowledge between them, (Styhre 2003). Knowledge flows influence the efficiency and scope of knowledge integration which Grant (1996) has identified as critical for effective decision-making. The flow of knowledge helps attain a level of integration efficiency relative to the scope of integration required, and facilitates the ability to make good decisions. It allows project teams to access, share and discuss knowledge uniquely distinct to each member, thus creating knowledge not possessed before which is vital for assessing different perspectives and developing solutions. The flow of knowledge between individuals is essential to facilitate collaborative activities and foster complex knowledge integration, and provide task relevant support to balance multiple perspectives and stakeholder interests.

Knowledge flows through the activities of knowledge creation, learning and reflection which are necessary to enable team members perform tasks essential for project implementation. Knowledge created while planning and developing the project is applied to identify mismatches, while performing causal analysis and ensuring mistakes are not repeated, enhances learning and reflection. Such reflection is required along with the experience of previous development efforts while planning projects, and knowledge created in doing so, needs to be transferred and applied for improved decision-making in future endeavours. Knowledge and learning gained through problem solving during decision-making need to be applied while implementing projects, while the knowledge created and experience gained needs to be applied to integrate different stakeholder expectations. Thus a continuous and iterative flow of dynamic knowledge is facilitated while implementing change projects, which depicts and balances the relationships between individual competence, team performance, knowledge integration and decision-making capabilities. The knowledge flows ensure that new

knowledge integrates with existing knowledge in a dynamic manner, and experience gained while implementing a change project is effectively transferred and applied to make improved decisions during subsequent efforts.

3. Summary

The aim of this paper is to conceptualise the relationship between individual competence, team performance, knowledge integration and decision-making capabilities while implementing projects that deliver change. Based on a literature study, the role of the above capabilities and their interactions are analysed to understand how knowledge integrates in a dynamic manner to enhance individual competence and team performance while implementing change projects, and can be effectively applied to make improved decisions. Feedback received at the conference will help strengthen and further develop the theoretical concepts and assumptions of this paper. Access has been secured to conduct empirical research to validate the hypothesis and model the relationships and interactions between the capabilities. The research is scheduled to begin in September 2016.

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